

MABEL at IPAC: managing address books and email lists at the Infrared Processing and Analysis Center

Megan Crane*, Carolyn Brinkworth, Dawn Gelino, Ellen O'Leary
Infrared Processing and Analysis Center, California Institute of Technology, Mail Code 100-22,
770 South Wilson Avenue, Pasadena, CA, USA 91125

ABSTRACT

The Infrared Processing and Analysis Center (IPAC), located on the campus of the California Institute of Technology, is NASA's multi-mission data center for infrared astrophysics. Some of IPAC's services include administering data analysis funding awards to the astronomical community, organizing conferences and workshops, and soliciting and selecting fellowship and observing proposals. As most of these services are repeated annually or biannually, it becomes necessary to maintain multiple lists of email contacts associated with each service. MABEL is a PHP/MySQL web database application designed to facilitate this process. It serves as an address book containing up-to-date contact information for thousands of recipients. Recipients may be assigned to any number of email lists categorized by IPAC project and team. Lists may be public (viewable by all project members) or private (viewable only by team members). MABEL can also be used to send HTML or plain-text emails to multiple lists at once and prevents duplicate emails to a single recipient. This work was performed at the California Institute of Technology under contract to the National Aeronautics and Space Administration.

Keywords: IPAC, Caltech, Software, Web Database Application, PHP, MySQL, Address Book, Email

1. INTRODUCTION

The Infrared Processing and Analysis Center (IPAC) manages the science operations of various NASA missions and the U.S. component of NASA collaborations. Current operational missions include the Spitzer, Herschel, Planck, and Wide-Field Infrared Survey (WISE) space observatories. IPAC also develops and maintains data archives such as the NASA/IPAC Extragalactic Database (NED), the NASA/IPAC Infrared Science Archive (IRSA), and the NASA Exoplanet Archive. IPAC is the institutional home of the Spitzer Science Center (SSC), the NASA Herschel Science Center (NHSC), and the NASA Exoplanet Science Institute (NExScI). NExScI was established to support projects in NASA's Exoplanet Exploration Program and to provide tools and archives for the exoplanet community.

MABEL (Managing Address Books and Email Lists) was originally designed to support the operations of the Science Affairs team at NExScI. Some of the team's tasks include administering the Sagan program of fellowships and workshops and soliciting, selecting, and administering data analysis funding awards to observing proposals for the NASA portion of the William M. Keck Observatory (NASA-Keck). The Sagan Fellowship and Summer Workshop are offered every year, and the NASA-Keck proposal selection process happens on a semesterly basis (twice a year).

Each year NExScI receives about 70 Fellowship applications, 150 workshop registrants, and 70 NASA-Keck proposals per semester comprising about 150 principal investigators and co-investigators. Additionally, in recent years, NExScI has hosted other conferences for as many as 250 participants. One Science Affairs team member was responsible for maintaining the lists of email contacts associated with each task, but this resulted in a single point failure system in which none of the other team members were able to access the lists. It was desired to create a system in which all team members could access the lists and the contact information contained therein. It was also desired to make the system available to other IPAC teams, as long as a certain level of security was maintained. For example, lists containing Time Allocation Committee membership needed to be kept confidential from other teams. It was also desired to create an email-sending program that would prevent duplicate emails to a recipient appearing on more than one list, which was not possible using standard email programs.

*mcrane@ipac.caltech.edu; phone 1 626 395-1993

2. WEB DATABASE APPLICATION

MABEL is a web database application built around a three-tier architecture model. At the base is the database tier, which contains the data that users may create, delete, modify, or query. The middle tier is the application logic, which consists of the webserver and the scripts that communicate the data between the other two tiers. The top tier is the client web browser software. MABEL was developed on Mac OS X using the open source trio of the PHP server-side scripting language, the MySQL database management system, and the Apache webserver. It utilizes the Secure Sockets Layer (SSL) protocol, which provides encryption services to ensure secure web transactions.

The database consists of six tables:

1. *Recipients* – a recipient is defined as a person in the database who can be assigned to any number of email lists. The recipients table stores the contact information and notes about each person, a last modified timestamp, and a unique identifier for each person.
2. *Lists* – a list is defined as a collection of email addresses. The lists table stores the name, privacy setting, categorization, last modified timestamp, and a unique identifier for each list.
3. *Members* – the members table defines the membership of each list. Each row of the table contains a list ID and a recipient ID. There may be duplicate entries of a list ID (if there is more than one recipient on a list) or duplicate entries of recipient ID (if the recipient is on more than one list) but the pair is always unique. If a recipient is removed from a list, the list ID + recipient ID pair is removed from the members table, not from the recipients table, so the recipient may remain on other lists.
4. *Emails* – stores draft and sent emails for archiving purposes.
5. *Users* – stores usernames, passwords, project and group designations, and privilege levels (administrative or general user) for each user of the system. Administrative users may view all emails and lists regardless of their privacy setting.
6. *Preferences* – stores email preferences for each user, including up to five email addresses that can be used for “From” and “Reply-to” fields as well as up to three versions of email signatures.

3. RECIPIENTS

Recipients can be entered into the system either one at a time via a web form or in bulk. To enter recipients in bulk, a user uploads a pipe-delimited text file that contains the recipients’ contact information. The required information is first and last name and email address, but the system can also store the recipient’s institution, telephone, mailing address, and any notes about the recipient. A new recipient may be simultaneously added to the system and to an existing email list.

Once a recipient has been added to MABEL, any user may view his/her entry. However, the recipient’s list membership may not be visible to every user, depending on the user’s project and group assignment (see Section 4.2 on privacy). Any user may edit the recipient’s contact information (see Figure 2), and MABEL records the timestamps and the names of both the user who added the recipient and the user who last modified the recipient. There is only one entry for a recipient even if they are assigned to multiple email lists, so if a recipient’s contact information is updated, it is updated for every list to which the recipient is assigned. Likewise, if a recipient is deleted from the system, he/she is removed from every list of which he/she was a member.

The email address of any recipient in the system always appears as a link, which opens the new message window of the user’s email program. This allows a user to quickly email a single recipient. Emails to one or more lists may also be sent (see Section 5).

The recipients in MABEL are listed alphabetically, and can be sorted by name, email address, or institution, but a faster way to find a recipient is to use the Search page. Users can search for a recipient by first or last name, email, institution, or notes about the recipient.

Note: screenshots are taken from an abbreviated demo system containing only IPAC recipients.

Mozilla Firefox

MABEL
Managing Address Books and Email Lists

Megan Crane
Home
Logout

Edit Recipients (18)

Sort by: Name Sort

A · B · C · D · E · F · G · H · I · J · K · L · M · N · O · P · Q · R · S · T · U · V · W · X · Y · Z · All

Delete Recipient(s)

Name (click to edit)	Email (click to email)	Institution	Delete
Akeson, Rachel	rla@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Appleton, Phil	apple@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Barba, Mary Ellen	mreb@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Brinkworth, Carolyn	csb@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Carey, Sean	carey@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Crane, Megan	mcrane@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Dean, Andrea	andrea@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Desai, Vandana	desai@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Ebert, Rick	rick@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Gelino, Dawn	dawn@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Groom, Steve	sgroom@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Hurt, Robert	hurt@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Imel, David	imel@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Kane, Stephen	skane@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Laine, Seppo	seppo@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Laity, Anastasia	laity@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Legassie, Mark	mark@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>
Millan-Gabet, Rafael	rafael@ipac.caltech.edu	IPAC-Caltech	<input type="checkbox"/>

Delete Recipient(s)

Figure 1. Sortable list of all recipients in the system. Clicking on a recipient name opens the “Edit Recipient” page (below).

Mozilla Firefox

MABEL
Managing Address Books and Email Lists

Edit Recipient

First Name: *

Last Name: *

Email: * (Send email)

Institution:

Telephone:

Address:

Notes:

Last modified by: *mcrane on 2012-06-07 15:38:50*

Update

List Membership

Name (click to view)	Project	Group (*private)	Category
<input type="checkbox"/> OT1p2_cancel (7)	Herschel	Observer Support*	Funding
<input checked="" type="checkbox"/> JPL Open House Volunteers 2012 (15)	IPAC	Communications	Outreach
<input checked="" type="checkbox"/> Outreach Volunteers (30)	IPAC	Communications	Outreach
<input checked="" type="checkbox"/> CFOP Users (63)	NExSci	Kepler*	CFOP
<input type="checkbox"/> Exoplanet Archive (294)	NExSci	Kepler	Exoplanet Archive
<input type="checkbox"/> 2007A Keck applicants (112)	NExSci	Science Affairs	NASA-Keck
<input type="checkbox"/> 2007A Keck PIs/CoIs (37)	NExSci	Science Affairs	NASA-Keck
<input type="checkbox"/> 2007B Keck applicants (8)	NExSci	Science Affairs	NASA-Keck

Update

Figure 2. Editing the contact information and list membership for one recipient.

4. EMAIL LISTS

4.1 Creating and editing

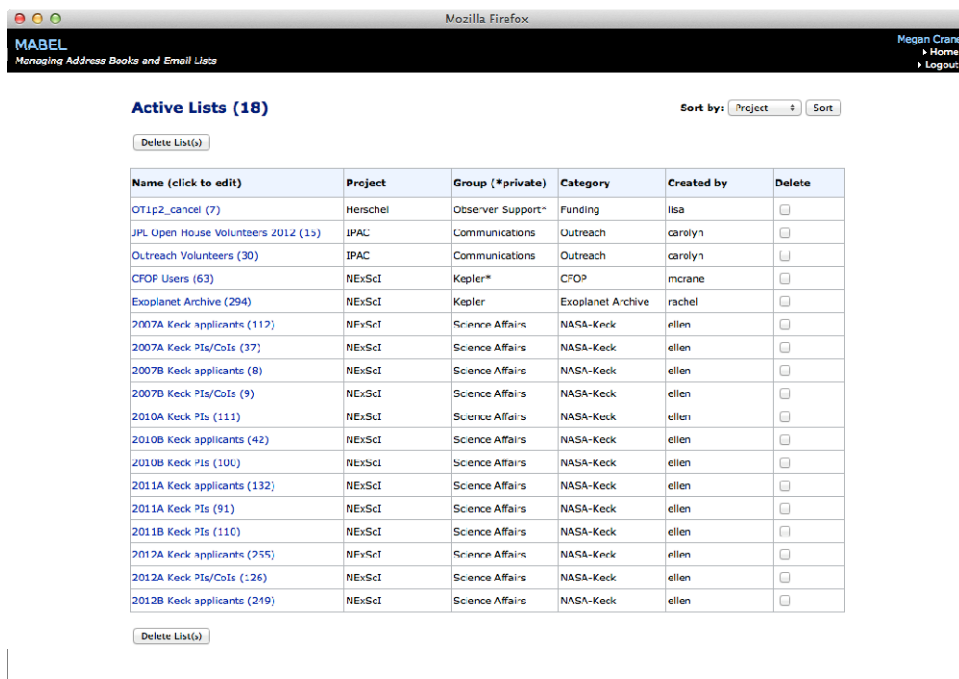
A new list may be created by entering the list name, the privacy setting (private or public, see Section 4.2), the project / group / category, and any notes about the new list into a web form. Projects are typically NASA science centers such as the SSC, NHSC, NExSci, or IPAC in general. Groups refer to staff teams such as Observer Support, Science Affairs, or Communications. Categories refer to the specific activities of a group; for example, the NExSci Science Affairs categories include the Sagan Fellowship and Workshop and the NASA-Keck proposal process.

A list may be created from scratch or from an existing list. Recipients already in the system may be added to the list at the same time the list is being created. Once the list has been created, it may be viewed or edited (see Figure 4) by any user with the appropriate permission. MABEL records the timestamps and the names of both the user who created the list and the user who last modified the list. A list may be deleted, but this does not delete the recipients associated with the list.

Lists may be active or inactive. Every new list is active by default. If a list is not needed for correspondence anymore, it may be made inactive, which means that it does not show up on the Lists page (see Figure 3) or the Compose Email page (see Figure 5).

4.2 Privacy

Lists may be public or private. If a list is public, every user in the project can view and edit the list. If a list is private, only the users in the group may view and edit the list. Users of MABEL are also assigned to projects and groups. For example, if a NExSci (project) Science Affairs (group) NASA-Keck (category) list is public, any user in the NExSci project can edit the list. If the list is private, only users in the Science Affairs group can edit the list.



Name (click to edit)	Project	Group (*private)	Category	Created by	Delete
OT1p2_cancel (7)	Herschel	Observer Support*	Funding	isa	<input type="checkbox"/>
JPL Open House Volunteers 2012 (13)	IPAC	Communications	Outreach	carolyn	<input type="checkbox"/>
Outreach Volunteers (30)	IPAC	Communications	Outreach	carolyn	<input type="checkbox"/>
CFOF Users (63)	NExSci	Kepler*	CFOF	mcrane	<input type="checkbox"/>
Exoplanet Archive (294)	NExSci	Kepler	Exoplanet Archive	rachel	<input type="checkbox"/>
2007A Keck applicants (112)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2007A Keck PIs/CoIs (37)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2007B Keck applicants (8)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2007B Keck PIs/CoIs (9)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2010A Keck PIs (111)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2010B Keck applicants (42)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2010B Keck PIs (100)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2011A Keck applicants (132)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2011A Keck PIs (91)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2011B Keck PIs (110)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2012A Keck applicants (255)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2012A Keck PIs/CoIs (126)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>
2012B Keck applicants (249)	NExSci	Science Affairs	NASA-Keck	ellen	<input type="checkbox"/>

Figure 3. Sortable list of all email lists in the system. Clicking on a list name opens the “Edit List” page (below).

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Managing Address Books and Email Lists

Edit List

Name: * 2011A Keck applicants [View existing names](#)

Privacy: * public

Project/Group/Category: * NExSt: Science Affairs: NASA-Keck

Status: active

Notes: Pie/cois who applied for time in 2011A.

Created by: ellen on 2011-09-01

Last modified by: mcrane on 2012-06-07 16:00:16

List Members [\(Add recipient\)](#) [\(Download addresses\)](#)

Name	Email	Institution
<input checked="" type="checkbox"/> Barba, Mary Ellen	meb@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Dean, Andrea	andrea@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Desai, Vandana	desai@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Ebert, Rick	rick@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Gelino, Dawn	dawn@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Groom, Steve	sgroom@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Kane, Stephen	skane@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Laine, Seppo	seppo@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Laity, Anastasia	laity@ipac.caltech.edu	IPAC-Caltech
<input checked="" type="checkbox"/> Millan-Gabet, Rafael	rafael@ipac.caltech.edu	IPAC-Caltech

Figure 4. Editing the information and membership for one list. The email addresses of all of the recipients in the list may be downloaded as a text file to the user's computer.

5. SENDING EMAILS

5.1 Composing

MABEL can be used to send an email message to one or more email lists, utilizing the PHP mailing library Swiftmailer (swiftmailer.org). The native PHP mail program is not used because it does not offer a simple way to add attachments to an email. Prior to composing a message, users may enter their email preferences into MABEL, such as multiple "From" addresses or email signatures. When composing a message, the user must select one of their stored "From" addresses or enter a new one. They may use the same Reply-to address or enter a new one. One or more lists may be selected as the "To" address. The user has the option to display or hide the email addresses from the recipients if there are a large number of addresses. The user may enter additional CC or BCC addresses, specify a subject of the message, add up to 5 file attachments, and attach one of their stored signatures.

The email message is composed using a Javascript WYSIWYG editor called openwysiwyg (openwebware.com). This allows the user to adjust the message font and color or insert tables, links, or images. Swiftmailer also generates a plain-text version of the message for email programs that may not be able to handle HTML format.

Once the message is composed, it may be sent immediately or saved as a draft. If an email is saved as a draft, the user may log back in later to edit and send the email. Users may only edit their own drafts, but they may view any email sent to a list in their project.

5.2 Sending and archiving

One of the requirements of MABEL was that it would not send duplicate emails to a recipient if the recipient was on more than one list. MABEL achieves this by placing all of the recipients' email addresses into an array and using the PHP "array_unique" function to remove duplicate values from the array. Once an email has been sent, it is stored in an archive on MABEL so that other users in the same project may view it.

MABEL
Managing Address Books and Email Lists
Megan Crane
Home
Logout

Compose Email

From:*
select
or

Reply-To:
select
or

To:*

Name (click to view)	Project	Group (*private)	Category
<input type="checkbox"/> CFOP Users (63)	NExSci	Kepler*	CFOP
<input type="checkbox"/> Exoplanet Archive (294)	NExSci	Kepler	Exoplanet Archive
<input type="checkbox"/> 2007A Keck applicants (112)	NExSci	Science Affairs	NASA-Keck
<input type="checkbox"/> 2007A Keck Pis/CoIs (37)	NExSci	Science Affairs	NASA-Keck

Show "to" addresses?
☐

CC:
(separate addresses with commas)

Bcc:
(separate addresses with commas)

Subject:*

Attachment(s):
 Browse...
 Browse...
 Browse...
 Browse...

Message:*

Select Font
Size
B
I
U
x
x
HTML

Signature:

None
Megan Crane
Applications Developer
IPAC/Caltech
mcrane@ipac.caltech.edu
626-395-1993

Save as Draft
Preview Email

Figure 5. Composing an email message. Note that the number of email lists is abbreviated in order to display the entire page in one screenshot.

6. CONCLUSION

MABEL was launched in August 2011 and is currently being used to manage about 50 email lists for NExSci's Science Affairs team, the IPAC Communications team, the NASA Herschel Science Center Observer Support team, and the Kepler Community Follow-up Observing Program. To date, it has been used to send about 80 emails to over 11,000 total recipients. It stores the contact information for over 2400 recipients, which facilitates the creation of new lists since most recipients already exist in the system. While originally conceived to be a tool to manage email lists, MABEL has been found to be very useful as a directory and a simple way to email a single recipient at a time. MABEL has proven to be an efficient tool for the Science Affairs team and is expected to be used by many other IPAC teams in the future.